

Responses to Review Panel Comments for Costs

The panel was asked to review the Corps' cost estimate for the Columbia River Channel Improvement Project. The review did not involve a line-by-line review of the cost estimate; rather, the panel set up a preliminary review and a secondary detailed review of items of concern. The cost panel had no outstanding disagreements or open questions upon the completion of the review.

Generally, the panel concluded that assumptions contained in the Corps' cost estimate were reasonable and complete. Responses to the panel's specific comments are included below.

1. Panel Comment. *Channel Design* The typical over depth for new work dredging would be the same as recent maintenance dredging. Dredging should be accomplished with an average over depth of one foot in sandy river bed reaches, an additional foot should be added to the required depth to accommodate future maintenance dredging.

Corps Response. We agree, the existing maintenance program requires 44 feet for the project and pays to 45 feet. To make the Channel Improvement Project consistent with the maintenance program we modified the dredging prism. For the purposes of this document the Corps' assumptions on dredging depths are the following: in sandy reaches the quantity was based on 48 feet; in basalt rock areas the quantity was based on 50 feet. The contract when awarded will be paid based on pre and post surveys of the channel.

The MCACES estimate includes an allowance for over digging, during the actual construction the contractor will have to remove the material to the require depth. For the Government Fair Cost Estimate the Corps will require the contractor to remove sandy material to 47 feet. The contractor will need to calculate their own over depth amount. In basalt area the contractor will be required to remove to 49 feet and again calculate their own over depth amount.

The original assumption in pipeline dredging included an additional one-half foot of non-pay over dig. This item has been eliminated from the cost estimate as a result of the panel's input.

2. Panel Comment. *Production Rates for All Dredge Types.* The dredge cuts will behave more as maintenance dredging cuts. The loose, mixed nature of the silty sand sediment will allow the dredge material to flow to the dredge and not behave as the more dense, consolidated material characteristic of new work virgin cuts. Because new work dredging will behave like maintenance dredging, the Corps 5% increases in dredge time for new work is too conservative and is not reasonable.

In channel areas where the advance rate of the dredge will control cutterhead production (i.e., where 67% of channel includes dredge faces less than four ft.), the Corps' estimates is too conservative. Production rates for larger cuts, greater than 10 ft., appear to be

reasonable while rates for dredging intermediate faces, four to 10 ft., would require further analysis to determine if advance rate or dredge pump rate control production.

Corps Response. The Corps will calculate the productions rates on cuts of 4 ft or less as the technical panel has recommended.

3. Panel Comment. *Cost Adjustment Factors.* The panel noted that the narrative section of the cost estimate identifies four topic areas where the panel concluded cost adjustment factors were inappropriately applied: over-depth quantities, quantities along the channel slope, cleanup factor and hopper dredge. Each topic area is addressed separately in the text below.

Corps Response: After a telephone discussion with the cost panel regarding these comment it was agreed that because so many factors are included in the overall production rate that it was not appropriate in the narrative for the cost estimate to call out individual factors. The Corps has re-written the narrative to address the production rate. The production rate used in producing the cost estimate is based on the running time of the dredge, and includes dredging all material in the dredging prism.

Panel Comment. *Over-depth Quantities:* the dredging contract should identify depth of dredging required for the project. An over-depth of one (1) ft. should be used for hydraulic pipeline and mechanical dredge, but should not be identified as a pay item.

Corps Response. Please see response to Number 1 above.

Panel Comment. *Quantities Along Channel Slope (Sand):* allowance for slope sloughing as a percentage of the dredging volume is too conservative, and is not reasonable.

Corps Response. Quantities along channel slope were included in the quantity calculations by assuming a slope of 1 on 3. This slope is based on extensive experience with maintenance dredging in the Columbia River and has proven to be a reasonable surrogate for the inherent unknowns in estimating the quantities. Though this approach may be conservative, we feel it is appropriate for planning phase of the project.

Panel Comment. *Cleanup Factor:* this is negligible for shallow cuts or for clamshell operation in the rock areas where dredging is not typically “new work,” and is more like maintenance dredging. For deep bank cuts (greater than eight-ten ft.), a consideration for clean up cost may be appropriate, but should be based on engineering analysis using geotechnical characteristics of slope failure and length of applicable reach, with a different value for different cut heights.

Corps Response. Although other means to calculate over all production rates could have been utilized, for the planning study the Corps applied 5% clean up factor. The Corps could have adjusted the overall production rate, but because all templates and calculations were handled in this same manner the Corps decided not to recalculate the

entire project at this point. We agree that the estimate is probably slightly conservative using this method.

Panel Comment. *Hopper Dredging:* a five percent (5%) increase in time is assumed for “new work” by the hopper dredges, but the project is virtually a maintenance dredging effort. Existing cost for maintenance dredging is an excellent basis for the hopper dredge cost estimate, without any time increase.

Corps Response. The Corps agrees that the material will be similar in nature to maintenance dredging; characterizations of the material have been modified to reflect the panel’s comments. The West Coast Team included the 5% increase in time as a cost item based on experience with maintenance dredging. The panel maintains existing costs for maintenance dredging is an excellent basis for the hopper dredge estimate. We agree the 5% cost item is routinely included in maintenance dredging cost estimates completed at this level. Consequently, the 5% increase in time will not be removed from the hopper dredging.